

Lower Upper Miocene Fan 1 (UM1 F1) Play

Discorbis 12 biozone

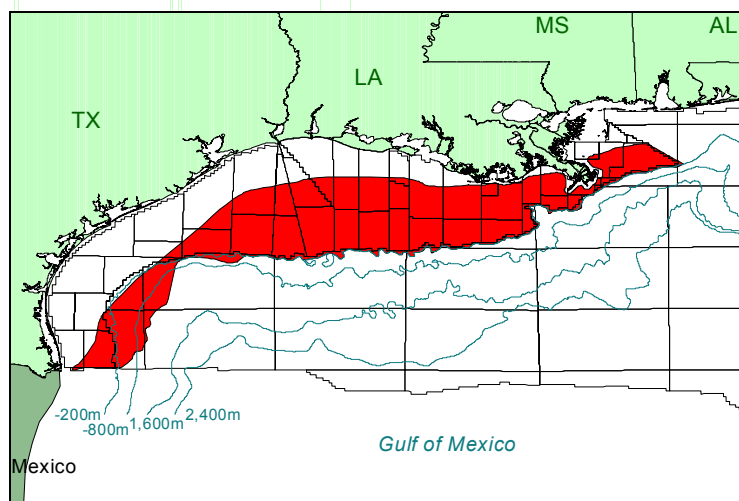


Figure 1. Play location.

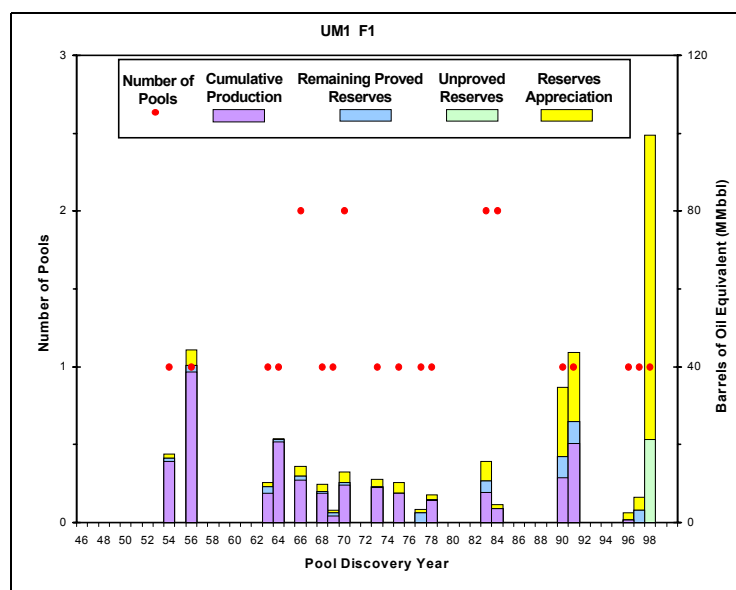


Figure 2. Exploration history graph showing reserves addition and number of pool discoveries by year.

UM1 F1 Play				
23 Pools 77 Sands	Minimum	Mean	Maximum	
Water depth (feet)	29	152	348	
Subsea depth (feet)	6400	12777	19398	
Number of sands per pool	1	3	8	
Porosity	14%	25%	33%	
Water saturation	16%	32%	49%	

Table 1. Pool attributes. Values are volume-weighted averages of individual reservoir attributes.

Play Description

The established Lower Upper Miocene Fan 1 (UM1 F1) play occurs within the *Discorbis* 12 biozone. The play is also defined by deep-sea fan sediments in an extensional structural regime of salt-withdrawal basins and extensive listric faulting located on the modern Gulf of Mexico Region shelf. The play extends from the South Padre Island and Port Isabel Areas offshore Texas to the Main Pass Area east of the present-day Mississippi River Delta (figure 1).

Updip, the play is bounded by the shelf/slope break associated with the *Discorbis* 12 biozone and sediments of the Lower Upper Miocene Progradational (UM1 P1) play. To the northeast, the UM1 F1 play is bounded by the Cretaceous carbonate shelf, while to the southwest, the play extends into Mexican national waters. Downdip, the play is bounded by the structural boundary of the Lower Upper Miocene Fan 2 (UM1 F2) play.

The UM1 is the oldest chronozone in which the shelf/slope break is located predominately in the present-day Federal offshore.

Play Characteristics

The UM1 F1 play is characterized by deepwater turbidites deposited basinward of the UM1 shelf margin on the UM1 upper and lower slope, in topographically low areas between salt structure highs, and on the abyssal plain. Component facies include channel/levee complexes, sheet-sand lobes, interlobes, lobe fringes, and slumps. These deep-sea fan systems are often overlain by thick shale intervals representative of sand bypass on the shelf, or sand-poor zones on the slope.

Many of the fields in the UM1 F1 play are structurally associated with growth fault anticlines and salt

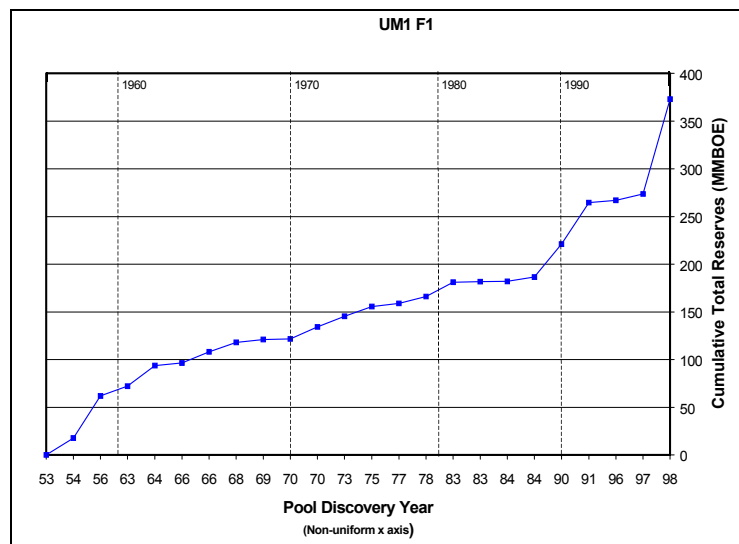


Figure 3. Plot of pools showing cumulative reserves by discovery order. Note the non-uniform x axis.

UM1 F1 Play Marginal Probability = 1.00	Number of Pools	Oil (Bbbl)	Gas (Tcf)	BOE (Bbbl)
Reserves				
Original proved	22	0.046	0.899	0.206
Cumulative production	—	0.042	0.763	0.178
Remaining proved	—	0.003	0.136	0.028
Unproved	1	0.005	0.093	0.021
Appreciation (P & U)	—	0.027	0.669	0.146
Undiscovered Conventionally Recoverable Resources				
95th percentile	—	0.178	1.769	0.516
Mean	62	0.277	2.593	0.739
5th percentile	—	0.425	4.181	1.104
Total Endowment				
95th percentile	—	0.255	3.430	0.889
Mean	85	0.354	4.254	1.112
5th percentile	—	0.502	5.842	1.477

Table 2. Assessment results for reserves, undiscovered conventionally recoverable resources, and total endowment.

diapirs with hydrocarbons trapped on diapir flanks or in sediments draped over diapir tops. Some fields contain hydrocarbon accumulations trapped by permeability barriers, updip pinchouts or facies changes. Seals are provided by the juxtaposition of reservoir sands with shales and salt, either structurally (e.g., faulting, diapirism) or stratigraphically (e.g., lateral shale-outs, overlying shales).

Discoveries

The UM1 F1 play is a mixed oil and gas play, with total reserves of 0.077 Bbo and 1.661 Tcfg (0.373 BBOE), of which 0.042 Bbo and 0.763 Tcfg (0.178 BBOE) have been produced. The play contains 77 producible sands in 23 pools of which 22 contain proved reserves (table 1; refer to the Methodology section for a discussion of reservoirs, sands, and pools). The first reserves in the play were discovered in the West Delta 58 field in 1954 (figure 2). The maximum yearly total reserves of 100 MMBOE were added in 1998 when the largest pool in the play in the play was discovered in the Grand Isle 116 field (Hickory) (figures 2 and 3). Eighty-two percent of the play's cumulative production and 50 percent of the play's total reserves are from pools discovered before 1990.

The 23 discovered pools contain 135 reservoirs, of which 89 are nonassociated gas, 40 are undersaturated oil, and 6 are saturated oil. Cumulative production has consisted of 76 percent gas and 24 percent oil.

Assessment Results

The marginal probability of hydrocarbons for the UM1 F1 play is 1.00. The play has a mean total endowment of 0.354 Bbo and 4.254 Tcfg (1.112 BBOE) (table 2). Sixteen percent of this BOE mean total endowment has been produced.

Assessment results indicate that undiscovered conventionally recoverable resources (UCRR) range from 0.178 to 0.425 Bbo and 1.769 to 4.181 Tcfg at the 95th and 5th per-

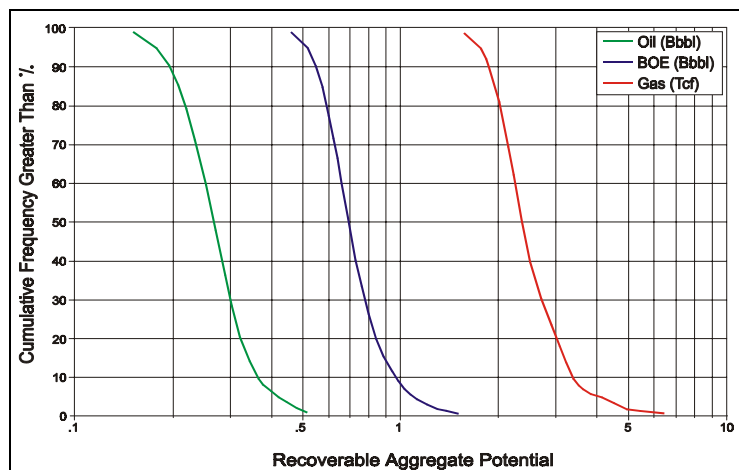


Figure 4. Cumulative probability distribution for undiscovered conventionally recoverable resources.

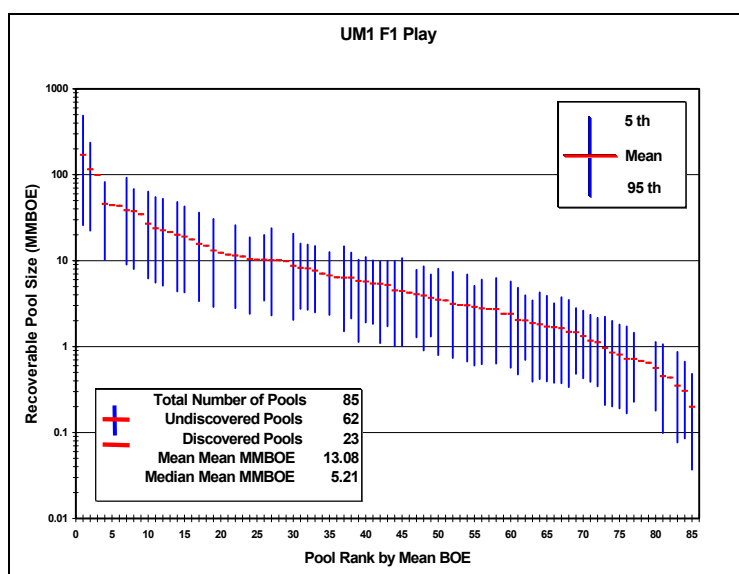


Figure 5. Pool rank plot showing the number of discovered pools (red lines) and the number of pools forecast as remaining to be discovered (blue bars).

centiles, respectively (figure 4). Mean UCRR are estimated at 0.277 Bbo and 2.593 Tcfg (0.739 BBOE). These undiscovered resources might occur in as many as 62 pools. The largest undiscovered pool, with a mean size of 171 MMBOE, is also forecast as the largest pool in the play (figure 5). The forecast places the next four largest undiscovered pools in positions 2, 4, 7, and 8 on the pool rank plot. For all the undiscovered pools in the UM1 F1 play, the mean mean size is 12 MMBOE, which is smaller than the 16 MMBOE mean size of the discovered pools. The mean mean size for all pools, including both discovered and undiscovered, is 13 MMBOE.

UCRR contribute 66 percent to the play's BOE mean total endowment. The UM1 F1 play encloses large areas containing allochthonous salt sheets, and thus has the potential for additional subsalt discoveries.